**Testimony of Jeffrey P. Ricker, CPA**

**Subcommittee on Finance and Hazardous Materials**
**H.R. 1053, the Common Cents Stock Pricing Act of 1997**
**April 10, 1997**

**Statement Summary:**

The debate on decimalization of our nation's stock markets lacks facts. There are open questions on whether investors will save money, and if so, how much. I am here today with the facts.

Here are the facts on investor savings: If just the New York Stock Exchange changed to nickel pricing, I estimate investors would save $2.25 billion dollars *per year*.

***How*** did I get this figure of $2.25 billion? On April 15, 1996 the Toronto Stock Exchange abandoned a 144-year legacy of stocks priced in eighths. Now stocks trade in nickels. I utilized the Canadian experience to project the potential savings if stocks on the NYSE also traded in nickels instead of eighths.

The TSE did not dry up, nor did the sky fall in. In fact, it flourished. Competition among traders intensified as they could now undercut each other's price for only a nickel instead of an eighth. It was a big win for the investor. Trading costs dropped 28.5%. On average, investors saved about C1.7¢ per share in trading costs, which adds up to C$216 million per year.

If the Canadians benefitted from decimalization, how about us? The NYSE trades about nine times as many shares as the TSE. The NYSE-listed companies are larger and more actively traded the their Canadian counterparts.

If NYSE stocks traded in nickels, investors would pay less to buy and receive more to sell. I project savings of about two cents a share, 1.94 cents to be exact. This is a one third decrease from current costs. For the big stocks in the S&P 500, trading costs are reduced by almost half. Two cents a share isn't much until you multiply it by 116 billion shares traded per year. The total savings: $2.25 billion *per year*.

The evidence is here is clear that investors will save a lot of money with decimal prices. The Canadian experience has shown that you get the most intense competition among traders and the lowest cost to investors when there is minimal interference from the pricing increment. The evidence also indicates that nickel pricing is not small enough. *Penny pricing* would yield the most savings.

I believe decimalization is the single best reform we can make to our stock markets today. However it happens, whether America's stock markets decimalize on their on volition, or whether they are forced to do so by H.R. 1053 and the Securities and Exchange Commission, America's markets need to decimalize.

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**Subcommittee on Finance and Hazardous Materials**
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**April 10, 1997**

**Testimony Statement:**

It is an honor and a pleasure to address the Members of the Subcommittee here today on H.R. 1053, the "Common Cents Stock Pricing Act of 1997".

I am an investment strategist by profession, and I've been strategizing for 16 years for large institutional investors. In my work, the cost of trading is often critical to the success of an investment strategy. In my work I have come to believe that our nation's fractional stock prices--those mysterious eighths, quarters, and halves that frustrate investors, are no longer just annoying to investors, they are costly to investors as well.

For over 200 years American stocks have been priced in fractions. Two hundred years ago fractions made sense. The young nation's numeraire was the Spanish dollar, which was subdivided into eight bits. About the same time, Thomas Jefferson designed the world's first decimal currency: the U.S. dollar.

Fractions don't make sense anymore. The one-eighth pricing grid is simply too coarse for today's high-tech investment strategies. Consider the S&P 500 Index. A one-eighth price difference in every stock translates to a quarter of a percent, or 25 basis points of the Index. To a manager of an S&P 500 Index fund or an arbitrage strategy where every basis point counts, 25 of them is truly enormous.

Stocks are traded in a continuous, competitive, two-way auction. A key element of the auction is the ability of buyers and sellers

undercut each other's price to obtain precedence in the order book. The bid-ask spread is the difference between the highest buying price and lowest selling price of these competing buyers and sellers. No matter what the intensity level of competition, this bid-ask spread cannot narrow below one eighth. At the one eighth spread, price competition stops because no one can undercut the price.

The binding constraint of the minimum spread is evident in the clustering of quotations at the minimum one-eighth spread on the New York and American Stock Exchanges. About half of the trading is in stocks that are quoted with a one-eighth spread more than 75% of the time.

For example, Exhibit I plots a typical day in the life of an active stock: General Motors. The average bid-ask spread in GM is 13.8¢ and it trades with a one-eighth spread 87% of the time. Trading costs are a direct function of the spread. Costs are incurred by counterparties, primarily investors, who "pay the spread" to obtain immediate execution against orders in the book. You can see the stock price zig zag all day long between the bid and ask price as investors hit the bids and take the offers. Every time the stock price zigs and zags, somebody is paying the spread to execute a trade. On average, investors pay 4.6¢ a share for GM in trading costs, not including brokerage commissions.

K-Mart is plotted in Exhibit II. K-Mart's price also shows the typical zig zag pattern as buyers and sellers come into the market. On this particular day the price stayed at 12 bid, 12 1/8 asked right up to the close. Competition is intense in K-Mart. It trades several million shares a day, and the spread is stuck at the minimum one-eighth 97% of the time. K-Mart has a lower stock price than GM, so a one-eighth spread is much more

costly for K-Mart investors, amounting to about 1% of stock price. The average trading cost is 4.5¢ a share. In cents, this is about as low as it gets with one eighth pricing. However, in percentage terms, K-Mart's trading cost is more than four times that of GM.

What would happen to bid-ask spreads and associated trading costs of GM, K-Mart, and the rest of the market if the stocks were priced in nickels, or even pennies?

Until recently, we could only guess. Now we know. On April 15, 1996 the Toronto Stock Exchange abandoned eighth fractions and introduced nickel pricing on all stocks priced above C$5. Our neighbors to the north created a terrific test case of decimalization.

The TSE did not dry up, nor did the sky fall in. In fact, it flourished. Exhibit III plots the bid-ask spread and quoted dollar size of the Toronto Stock Exchange 300 Index from January 2, 1996 to September 30, 1996. Decimalization Day, April 15, 1996, is identified in the Exhibit. The immediate and profound effect of the new nickel tick is clearly apparent. The average percentage bid-ask spread of the Index shrank 27% from 0.78% to 0.57%.

Aggregate size is indicated by the width of the shaded bands surrounding the spread. This is the dollar value of the Index stocks available for trading at the bid and offer prices. Although size fell 44% because less orders piled up at the narrower spreads, the average quote size remained well above the average trade size.

Investor savings were huge. Average bid-ask spreads, weighting each stock by dollar volume, narrowed more than 30% from C16.6¢

to C11.6¢. The narrower spreads yield savings because investors pay less to buy, and receive more to sell. Average trading costs decreased 28.5% from C6.0¢ a share to C4.3¢ a share. The C1.7¢ trading cost savings multiplied over 12.5 billion shares traded per year amounted to annual investor savings of C$216 million.

By all accounts, the Canadian transition was well planned and occurred smoothly and efficiently. Even the nickel may not have been small enough. After decimalization, thirty Canadian stocks were quoted at the new minimum bid-ask spread of a nickel more than 75% of the time. These were big, active stocks comprising about a quarter of trading value. With penny pricing permitting spreads less than a nickel, additional substantial investor savings could have been achieved.

The NYSE and AMEX trade about nine times as many shares as the Canadian market. Market structures are similar but U.S. stocks are larger, more actively traded, and higher priced. Using the Canadian experience, we can project the benefits of decimalization for U.S. investors.

Sophisticated econometric models were fitted to explain changes in Canadian bid-ask spreads and trading costs from the shift to nickel pricing. Then these models were applied to estimate savings if U.S. stocks were also priced in nickels. Savings were calculated for all 2,942 NYSE- and AMEX-listed stocks priced above $5 and trading in eighths.

As in Canada, the U.S. investor savings are huge. For example, the average spread for General Motors is projected to shrink from 13.8¢ to 7.4¢. The narrower spread means smaller zigs and zags in the stock price and investors pay less to buy and receive more to sell. Trading costs drop to 2.0¢ a share, a 2.6¢ savings. The latent demand for a narrower spread is very high for K-Mart.

The projected spread is 5.3¢, indicating that it will be quoted with a nickel spread at least 94% of the time. Trading costs decrease by almost half from 4.5¢ to 2.3¢ per share.

What was good for General Motors, was good for the rest of the market. For all 2,942 NYSE and AMEX stocks, projected average bid-ask spreads and trading costs decrease by a third, weighting each stock by dollar volume. Results are shown in the following table:

**Projection of U.S. Investor Savings from Nickel Prices**

| | | Nickel Pricing | | |
|---|---|---|---|---|
| 2,942 Stocks | l/S Pricing | Projection | Difference | % Savings |
| Bid-Ask Spread | 0.43% | 0.27% | -0.16% | -37.21% |
| Bid-Ask Spread | 16.01¢ | 10.36¢ | -5.65¢ | -35.29% |
| Trading Cost | 5.72¢ | 3.78¢ | -1.94¢ | -33.88% |
| NYSE & AMEX S&P 500 Stocks | | | | |
| Bid-Ask Spread | 0.30% | 0.16% | -0.14% | -46.67% |
| Bid-Ask Spread | 15.14¢ | 7.93¢ | -7.21¢ | -47.62% |
| Trading Cost | 5.30¢ | 2.81¢ | -2.48¢ | -46.90% |

Spreads and trading costs are nearly halved for the subset of big stocks in the S&P 500 Index. The 2.48¢ trading cost savings amounts to about five basis points or 1/20th of one percent of the Index value. The projected percentage spread and quoted dollar size of the S&P 500 Index are shown in Exhibit IV. As in Canada, the quoted size decreases, but the average size remains well above the average trade size.

On average, U.S. investors save 1.94¢ a share in trading costs. Two cents isn't very much until it is multiplied by the annual NYSE and AMEX trading volume of 116 billion shares. The total savings: $2.25 billion per year.

With nickel pricing, 44% of dollar volume is traded in stocks with projected average bid-ask spreads of less than 10¢ per share. For these stocks, and K-Mart is a prime example, spreads less than a nickel would be frequently utilized if traders competed in pennies. Competition in the bidding and offering of stock is best invigorated with minimal interference from the price increment.

Savings were not estimated for NASDAQ. NASDAQ is a dealer-only marketplace that doesn't use the two-way auction system of the TSE, NYSE, and AMEX. NASDAQ bid-ask spreads and trading costs are significantly higher than for comparable stocks on the NYSE and AMEX. Since NASDAQ's trading mechanism is so different from the TSE, benefits of decimalization cannot be quantified by projecting the Canadian experience. Here we can only guess. On a volume of 500 million shares a day each penny saved translates to $1.25 billion per year.

In the decimal debate, there are open questions on whether investors will save money, and if so, how much. The evidence here is clear: Decimalization saves investors a lot of money.

In my work and research, I have come to believe decimalization is the single best reform we can make to our stock markets today. It is truly ironic that the nation with the first decimal currency in the world now has the last stock market in the world using fractional prices. However it happens, whether America's stock markets decimalize on their on volition, or whether they are forced to do so by H.R. 1053 and the Securities and Exchange Commission, America's markets need to decimalize.

**EXHIBIT I**

## A DAY OF TRADING IN GENERAL MOTORS
**APRIL 1, 1997**


**EXHIBIT II**

## A DAY OF TRADING IN K-MART
**APRIL 1, 1997**

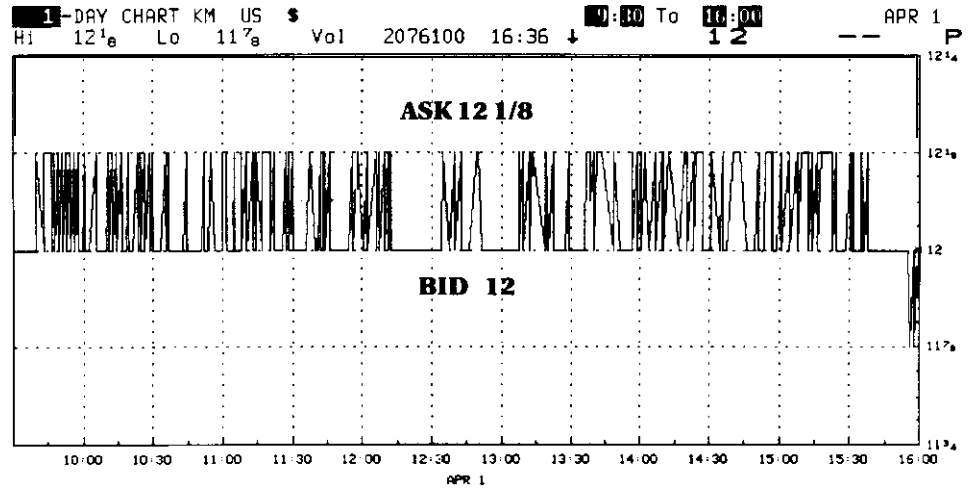
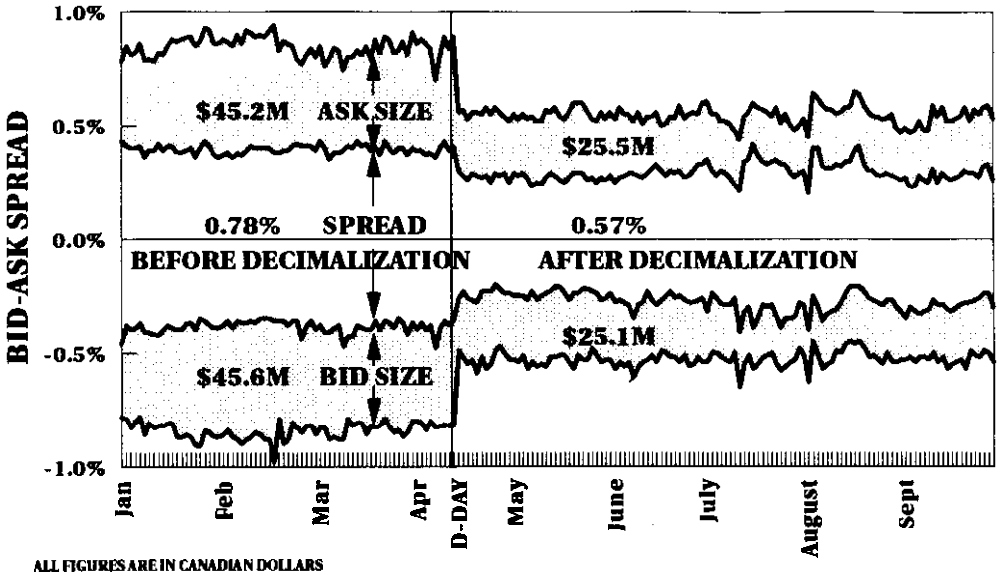


EXHIBIT III

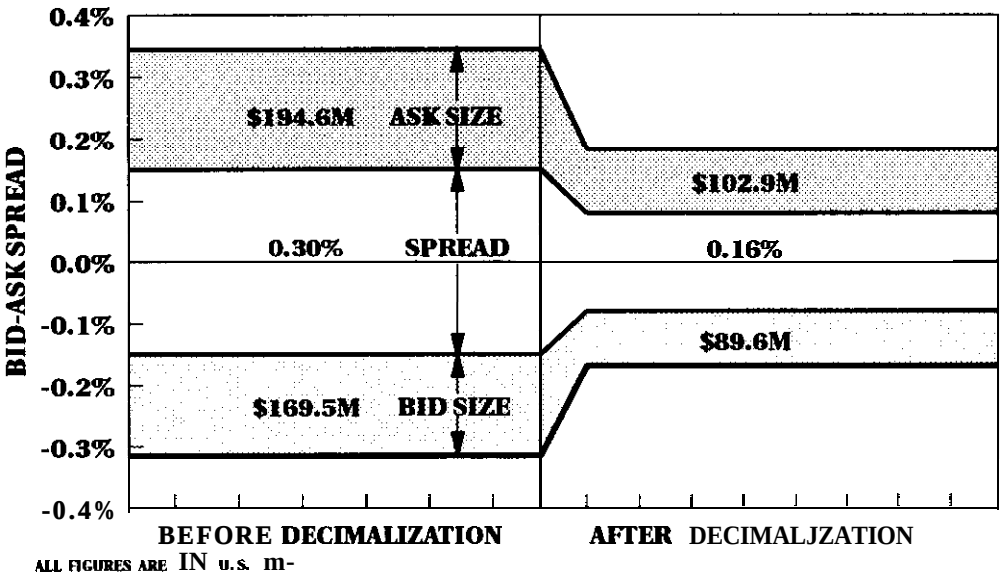
## TSE 300 INDEX BID-ASK SPREAD AND SIZE
JANUARY2, 1996 - SEPTEMBER 30, 1996




ALL FIGURES ARE IN CANADIAN DOLLARS

EXHIBIT IV

## S&P 500 BID-ASK SPREAD AND SIZE
PROJECTION WITH NICKEL PRICING




ALL FIGURES ARE IN U.S. m-

**Testimony of Jeffrey P. Ricker, CPA**

**Subcommittee on Finance and Hazardous Materials**
**H.R. 1053, the Common Cents Stock Pricing Act of 1997**
**April 10, 1997**

**Attachments:**

Three attachments are submitted with this testimony:

1. The abstract of the research paper, "Decimal Pricing: Nickel Markets," which was the basis for this testimony. This paper is an empirical study of investor savings from decimalization. First the effect of decimalization on stock quotes and trading costs on the Toronto Stock Exchange are analyzed. Second, econometric models are fitted to the Canadian data. Third and most importantly, these models are applied to project the effect of decimalization on stock quotes and trading costs on the New York and American Stock Exchanges.

   The full research paper is available on request from the witness, who is the author of the paper.

2. The abstract of the research paper, "Decimal Quotes: The Price Is Right." This paper advocates decimalization from a market efficiency point of view. The one eighth pricing grid, the "insidious eighth," is identified as the largest source of friction in our nation's stock markets. Fractional prices hinder competition and therefore impairs market efficiency. The solution is decimal prices with a one cent minimum price increment.

   The full research paper is available on request from the witness, who is the author of the paper.

3. The resume of the witness.

## Decimal Pricing: Nickel Markets

### Abstract

What would happen to bid-ask spreads and associated trade execution costs if stocks were priced in nickels, or even pennies? More broadly; are investors better off letting the marker, rather than the ***marketplace,*** set the spread?

On April 15, 1996 the Toronto Stock Exchange abandoned eighth fractions and introduced nickel pricing on all stocks priced above C$5. This research is first an extensive study of the effect of decimalization on spreads and execution costs on the TSE. Second, econometric models are fitted to the Canadian data. Third and most importantly, these models are applied to project the effect of decimalization on stocks trading on the NYSE and AMEX.

Canadian average bid-ask spreads immediately narrowed more than 30%. Average trade execution costs decreased 28.5%. Annual savings amounted to C$216 million per year. U.S. NYSE and AMEX bid-ask spreads and trade execution costs are projected to decrease by a third and are nearly halved for the S&P 500. The projected total savings: two cents a share and US$2.25 billion per year.

The evidence is clear: Investors save a lot of money with nickel pricing and perhaps more with penny pricing. Competition in the bidding and offering of stock is best invigorated with minimal interference from the price increment.

The full research paper is available on request. Contact the author:

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**Decimal Quotes: The Price Is Right**

## Abstract

In all U.S. equity markets the minimum price increment is one eighth of a dollar. This "insidious eighth" is the largest source of friction in our equity markets today. Fractional pricing hinders competition and therefore impairs market efficiency. The solution is decimal pricing and a one cent minimum price increment. Efficiency is improved because equilibrium stock prices are resolved to the penny. Competition in bidding and offering stock is intensified, significantly increasing liquidity. In addition, market structure anomalies such as payment for order flow, fragmentation, and internalization are discouraged by the natural forces of economics, alleviating the need for regulation. Most importantly, investor savings are estimated amounting to several billion dollars per year.

The full research paper is available on request. Contact the author:

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**EXPERIENCE**

**CONSULTANT - INVESTMENT STRATEGIST** **San Francisco, CA**
**1985-Present** **Contract Quantitative Research**

- Designed a multifactor stock selection model.
- Developed a valuation model for Treasury Bond Futures.
- Expert Witness for investment management litigation.
- Investigation of the October 1987 Stock Market Crash.

**MELLON CAPITAL MANAGEMENT** **San Francisco, CA**
**1985-Present** **Consultant for Research and Development**

- Research and implementation of quantitative strategies.
- Designed a $4 Billion Asset Allocation strategy.
- Improved futures arbitrage tripling assets to $2.5 Billion.
- Implemented a $1 Billion Portfolio Insurance program.

**BARCLAYS GLOBAL INVESTMENT ADVISORS** **San Francisco, CA**
**1981-1984** **Research and Development - Investment Strategist**

- Designed, implemented and managed the Portfolio Insurance and Stock Index futures arbitrage strategies.
- Designed a portfolio performance analysis system.

**EDUCATION**

**Graduate School of Business, University of Chicago** **Chicago, IL**
**1979-1981** **Master of Business Administration**
- Specialization in Finance with concentration in Accounting.
- Research focused on empirical analysis of the stock market.

**Vanderbilt University** **Nashville, TN**
**19751979** **Bachelor of Arts, cum laude**
- Majored in Economics and Business Administration.
- Elective course work emphasized statistics and mathematics.

**SKILLS** FORTRAN, Lotus 1/2/3, Excel, Freelance, RATS, PC Write.

**PROFESSIONAL** Chairman, University of Chicago MBA Bay Area Alumni Assn.
Chairman, Audit Committee Security Analysts of San Francisco.
Member of AIMR and AFA. NFA Series 3 Registered.

**PERSONAL** Florida native. Eagle Scout. Interests: investing, reading, classic Chevrolets, volleyball, and skiing.

Testimony of Jeffrey M. Bacidore regarding H.R. 1053

## Summary

I support H.R. 1053 which would require the decimalization of U.S. exchanges. I agree with other supporters who argue that it will make price quotes simpler and will allow for more consistency with foreign equity markets and derivative markets. However, although I support the bill as written, I do not believe that a reduction in the minimum tick size should be mandated. Recent theoretical and empirical research suggests that a sufficiently large minimum tick is necessary to maintain market quality. Thus, a reduction in the minimum tick size will not necessarily improve market quality and may, in fact, cause harm. Consequently, I believe that the individual exchanges should be allowed to set their own post-decimalization tick sizes. Competition across exchanges will force exchanges to institute minimum tick size reductions if this is what investors demand. The fact that tbe American Stock Exchange has already approved a reduction in its minimum tick and that tbe NASDAQ is considering a similar move confirms this. Further, although some empirical evidence suggests that reductions in the minimum tick size has enhanced the quality of markets which instituted them, it is important to note that these studies have focused on *voluntary* reductions Therefore, it is not obvious whether market quality will be enhanced if reductions in the minimum tick are mandated.